

AHJEONG SEO

Samsung Research

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RESEARCH INTEREST

My primary research goal is to **develop robustly reasoning AI like humans** through structured and disentangled inference. I'm especially interested in the explicit and robust reasoning process via traversing over concept graphs constructed with neuro-symbolic approaches. Currently, I am researching improving logical reasoning performances of large-scale models with this method in Samsung Research.

RESEARCH PUBLICATIONS

Neuro-Symbolic Graph Reasoning for Robust Inference in Neural Sequence Models (in preparation)
Ahjeong Seo, Joohyung Lee, *International Conference on Learning Representations.2023 (ICLR 2023)* May 2023

Attend What You Need: Motion-Appearance Synergistic Networks for Video Question Answering
Ahjeong Seo, Gi-Cheon Kang, Junhan Park, Byoung-Tak Zhang, *The Joint Conference of the 59th Annual Meeting of the Association for Computational Linguistics and the 11th International Joint Conference on Natural Language Processing (ACL-IJCNLP 2021)* August 2021

DramaQA: Character-Centered Video Story Understanding with Hierarchical QA
Seongho Choi, Kyoung-Woon On, Yu-Jung Heo, Ahjeong Seo, Youwon Jang, Minsu Lee, Byoung-Tak Zhang, *Proceedings of the Thirty-Fifth AAAI Conference on Artificial Intelligence (AAAI 2021)* February 2021

Sparse Self-Attention Mechanism for Learning Sequential Video Data
Ahjeong Seo, Kyoung-Woon On, Byoung-Tak Zhang, *Korea Software Congress 2019 (KSC 2019)* December 2019

WORK EXPERIENCE

AI Methods Team, Samsung Research Aug. 2021 - Now
Researcher (Adviser: Joohyung Lee) Seoul, Korea

- **Large-Scale AI:** Researching a dual-system model complementing the reasoning limitations of Samsung's large-scale model applications with a neuro-symbolic graph approach, and planning to submit a paper to the ICLR 2023.
- **Neuro-Symbolic Contents Search:** Developed a search engine for movie contents considering both lexical and semantic clues in queries. Specifically, experimented with neural models for semantic search, contributed to a keyword search engine with Elastic Search, and collected and cleaned content data.

RESEARCH PROJECT

Video Turing Test Sep. 2019 - Aug. 2021
Researcher at Seoul National University (Adviser: Byoung-Tak Zhang)

- **Research (AAAI 2021, ACL 2021):** Aimed to build an AI with human-level intelligence for video understanding, conducted research to allow the AI to robustly and explicitly reason via structuring information based on interdisciplinary knowledge. Proposed a model combining divided visual signals depending on texts for multi-modal reasoning based on human visual processing for ACL 2021. Recommended the DramaQA dataset and a baseline model for hierarchical video understanding based on human cognitive development stages for AAAI 2021.
- **Organizing Challenges and Workshops (ECCV 2020, ICCV 2019):** Participated in organizing DramaQA challenges and Video Turing Test workshops, managed EvalAI challenge server, and built the homepage: <https://dramaqa.snu.ac.kr/>

EDUCATION

Seoul National University*Master of Science in Neuroscience*Interdisciplinary Program in Neuroscience (*Adviser: Byoung-Tak Zhang*)

Thesis: Motion-Appearance Synergistic Networks for Video Question Answering

Sep. 2019 - Aug. 2021

Seoul, Korea

Hanyang University*Bachelor of Engineering in Computer Engineering, Minor in Industrial Engineering*

Department of Computer Engineering

Mar. 2014 - Aug. 2019

Seoul, Korea

INTERNSHIP

Clova Biz AI, Naver Corp.

Nov. 2018 - Feb. 2019

Apollo Backend, Naver Corp.

Jul. 2018 - Aug. 2018

Intern

Seongnam-si, Korea

- Experimented with ML models for a website project and various service demonstrations
- Generated and pre-processed data, built docker environment and APIs, and developed website with Spring Framework, jQuery Ajax, HTML, and CSS

HONORS AND AWARDS

International Short-Term Dispatch Program Scholarship, Hanyang University

Jun. 2016

Dean's Encouragement Award, Hanyang University

Nov. 2014

Honors Scholarships, Hanyang University

Sep. 2014

EXTRA-CURRICULAR

Algorithm Club at Hanyang University

Mar. 2014 - Aug. 2019

- Participated in algorithm study groups, and received Dean's Encouragement Award in an in-school competition

Hanyang University Buddy Assistants

Jan. - Feb. 2018

- Organized and participated in many activities and helped foreign students adapt to Korean culture and life

Short-term Overseas Dispatch Program, University of Indonesia

Jul. - Aug. 2016

Exchange Student, Nanyang Technological University

Jan. - May 2016

- Developed cultural competence via activities such as field-trips, hip-hop liberal arts class, and wakeboarding club

SKILLS AND LANGUAGE

Technical Skills

Pytorch, Tensorflow, Python, C++, C, HTML, R, Java

Language ProficiencyFluent in **English** and Native in **Korean****REFERENCES**

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Joohyung Lee*Associate Professor / Vice President at Samsung Research*

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Fulton Schools of Engineering, Arizona State University

AI Methods Team, Samsung Research

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